detecting electrode **67** and the second working electrode **69** are connected with a bias voltage **71**.

A particular working process is as follows. On the surface of the CEA-LAPS sensor **68** are disposed the nanolayer **75** and the biotin layer **76**. At this point, the condensate flows into the CEA detecting cavity, the CEA antigen **77** in the condensate bonds with the biotin layer **76** via a covalent bond, and affixs to the surface of the CEA-LAPS sensor **68**. Then, the CEA antibody-avidin **79** and the CEA antibody-urease **78** flow into the CEA detecting cavity, and bonded with the CEA antigen **77**, forming a sandwich structure as shown in the figure. Then, the washing liquid cleans out extra CEA antibody-urease **78**, and only leaves the sandwich structure consisting of the CEA antigen **77**, the CEA antibody-urease **78** and the CEA antibody-avidin **79** on the CEA-LAPS sensor **68** in the CEA detecting cavity. Then, the urea flows into the CEA detecting cavity, reacts with the urease on the sandwich structure, and leads to a change of pH, and the change in pH is related with the amount of the CEA antigen **77** in the condensate. The CEA-LAPS sensor **68** obtains the amount of the CEA antigen **77** in the condensate by detecting the change of pH.

The invention claimed is:

1. An integrated analysis device for simultaneously detecting human exhaled breath condensates (EBCs) and volatile organic compounds (VOCs) in human exhaled breath, comprising a module for sampling, separating and enriching a detected object, an EBCs detection module and a combined VOCs detection module; the module for sampling, separating and enriching the detected object is connected with the EBCs detection module via a syringe pump for sample injection, and the module for sampling, separating and enriching the detected object is connected with the combined VOCs detection module via a capillary separation column; wherein the EBCs detection module comprises an EBC inlet (**57**), an inlet for washing liquid (**58**), a first three-way valve (**59**), a composite light addressable potentiometric sensor (LAPS) for heavy metal ions (Cr^{3+}) (**60**), a first working electrode (**61**), a light source controlled by a signal generating circuit (**62**), a reference electrode (**63**), a second three-way valve (**64**), a urea inlet (**65**), a detecting electrode (**67**), a carcinoembryonic antigen light addressable potentiometric sensor (CEA-LAPS) (**68**), a second working electrode (**69**), a Cr^{3+} ion detecting cavity and a carcinoembryonic antigen (CEA) detecting cavity; the EBC inlet (**57**), the inlet for washing liquid (**58**) and the Cr^{3+} ion detecting cavity are connected via the first three-way valve (**59**); the urea inlet (**65**), the Cr^{3+} ion detecting cavity and the CEA detecting cavity are connected via the second three-way valve (**64**); the reference electrode (**63**) is inserted into the Cr^{3+} ion detecting cavity from its top; the composite LAPS for heavy metal ions (Cr^{3+}) (**60**) and the first working electrode (**61**) are fixed to the bottom of the Cr^{3+} ion detecting cavity; the first working electrode (**61**) is joined with the bottom of the composite LAPS for heavy metal ions (Cr^{3+}) (**60**); the detecting electrode (**67**) is inserted into the CEA detecting cavity from its top; the CEA-LAPS (**68**) and the second working electrode (**69**) are fixed to the bottom of the CEA detecting cavity, and the second working electrode (**69**) is joined with the bottom of the CEA-LAPS (**68**); at the upper portion of the CEA detecting cavity are disposed an inlet for CEA antibody-urease compound liquid (**66**) and an outlet for waste liquid (**70**); one light source controlled by the signal generating circuit (**62**) is placed at a position corresponding to the composite LAPS for heavy metal ions (Cr^{3+}) (**60**) under the Cr^{3+} ion detecting cavity, and another light source controlled by the signal generating circuit (**62**) is placed at a position corresponding to the CEA-LAPS (**68**) under the CEA detecting cavity.

2. The integrated analysis device for simultaneously detecting EBCs and VOCs in human exhaled breath according to claim **1**, wherein the CEA-LAPS (**68**) is built by depositing a silicon dioxide (SiO_2) layer (**73**) and a silicon nitride (Si_3N_4) film (**74**) in turn on a Si substrate (**72**) a chemical vapor deposition and photolithography, and forming a nanolayer (**75**) and a biotin layer (**76**) on the surface of the Si_3N_4 film (**74**) by a chemical coating method.

3. The integrated analysis device for simultaneously detecting EBCs and VOCs in human exhaled breath according to claim **1**, the module for sampling, separating and enriching the detected object further comprising a mouthpiece (**1**), a saliva collector (**2**), an inspiration check valve (**3**), an expiration check valve (**4**), a first three-way solenoid valve (**5**), a second three-way solenoid valve (**6**), an activated carbon filter (**7**), an inlet check valve (**8**), a gas buffering chamber (**9**), a third three-way solenoid valve (**10**), a gas outlet (**11**), an adsorption tube (**12**), a miniature vacuum pump (**13**), a gas mass flow meter (**14**), a linear stepping motor (**15**), a piston (**16**), a washing liquid storage for condensation tube (**17**), a peristaltic pump (**18**), a condensation module (**19**), and a condensate collector (**20**); wherein the mouthpiece (**1**) is connected with the first three-way solenoid valve (**5**) via the inspiration check valve (**3**) and the expiration check valve (**4**) in turn, the saliva collector (**2**) is connected between the mouthpiece (**1**) and the inspiration check valve (**3**), the two outlets of the first three-way solenoid valve (**5**) are connected respectively with the second three-way solenoid valve (**6**) and the gas mass flow meter (**14**); the inlet check valve (**8**) is then connected with the third three-way solenoid valve (**10**) via the activated carbon filter (**7**), the second three-way solenoid valve (**6**) and the gas buffering chamber (**9**) in turn, the two outlets of the third three-way solenoid valve (**10**) is then connected respectively with the gas outlet (**11**) and the adsorption tube (**12**) and to the miniature vacuum pump (**13**); the gas mass flow meter (**14**) is connected with the condensation module (**19**), and all the above connections are a gas pipeline connection; the washing liquid storage for condensation tube (**17**) is connected with the condensate collector (**20**) in a liquid pipeline via the peristaltic pump (**18**) and the condensation module (**19**) in turn; the linear stepping motor (**15**) is connected with the piston (**16**), and drives the piston (**16**) into the condensation module (**19**).

4. The integrated analysis device for simultaneously detecting EBCs and VOCs in human exhaled breath according to claim **3**, the gas buffering chamber (**9**) further comprising a heating rod (**21**), a heating piece (**22**) and a conduit (**23**), wherein both the heating rod (**21**) and the conduit (**23**) are placed within the heating piece (**22**).

5. The integrated analysis device for simultaneously detecting EBCs and VOCs in human exhaled breath according to claim **3**, the condensation module (**19**) further comprising the piston (**16**), a gas inlet (**26**), an inlet for washing liquid (**27**), a condensation tube (**28**), an ice cooling box (**29**), and a condensate outlet (**30**); the gas inlet (**26**), the inlet for washing liquid (**27**), the condensate outlet (**30**) and a condensation tube (**28**) are formed integrally, the piston (**16**) is inserted into the condensation tube (**28**), and the ice cooling box (**29**) is in close contact with the outside of the condensation tube (**28**).

6. The integrated analysis device for simultaneously detecting EBCs and VOCs in human exhaled breath according to claim **3**, the module for sampling, separating and enriching the detected object further comprising an aluminium piece (**24**) and a cooling plate (**25**), the aluminium piece (**24**) is in close contact with the periphery of the adsorp-